

N-channel junction FETs

PMBFJ108;
PMBFJ109; PMBFJ110

FEATURES

- High-speed switching
- Interchangeability of drain and source connections
- Low $R_{DS(on)}$ at zero gate voltage ($< 8 \Omega$ for PMBFJ108).

DESCRIPTION

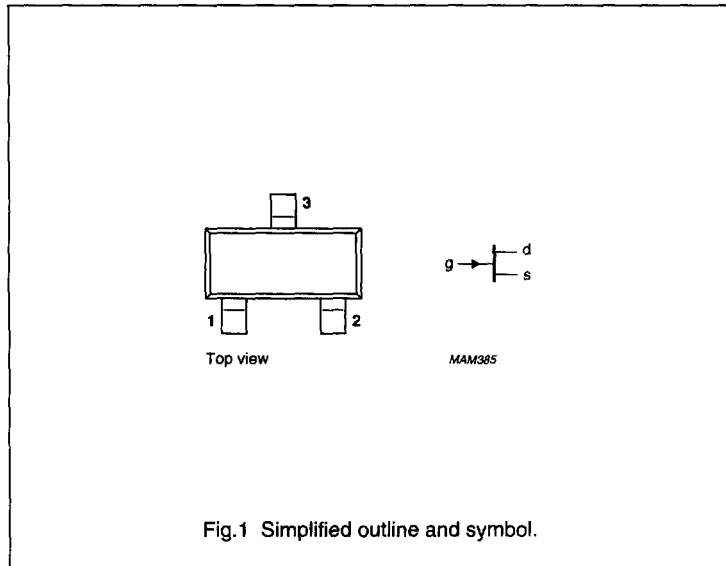
Symmetrical N-channel junction FETs in a SOT23 envelope. Intended for use in applications such as analog switches, choppers and commutators and in audio amplifiers.

PINNING - SOT23

PIN	DESCRIPTION
1	drain
2	source
3	gate

Note

1. Drain and source are interchangeable.



LIMITING VALUES

In accordance with the Absolute Maximum Rating System (IEC 134).

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
V_{DS}	drain-source voltage		–	± 25	V
V_{GSO}	gate-source voltage		–	–25	V
V_{GDO}	drain-drain voltage		–	–25	V
I_G	forward gate current (DC)			50	mA
P_{tot}	total power dissipation	$T_{amb} = 25^\circ\text{C}$; note 1	–	250	mW
T_{stg}	storage temperature		–65	150	$^\circ\text{C}$
T_j	operating junction temperature		–	150	$^\circ\text{C}$

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THERMAL RESISTANCE

SYMBOL	PARAMETER	VALUE	UNIT
$R_{th\ j-a}$	from junction to ambient (note 1)	500	K/W

Notes

1. Mounted on an FR-4 printboard.

STATIC CHARACTERISTICS

 $T_j = 25\text{ }^\circ\text{C}$.

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
$-I_{GSS}$	reverse gate current	$-V_{GS} = 15\text{ V}$ $V_{DS} = 0$	–	3	nA
I_{DSX}	drain-source cut-off current	$V_{GS} = -10\text{ V}$ $V_{DS} = 5\text{ V}$	–	3	nA
I_{DSS}	drain current PMBFJ108 PMBFJ109 PMBFJ110	$V_{GS} = 0$ $V_{DS} = 15\text{ V}$	80 40 10	– – –	mA
$-V_{(BR)GSS}$	gate-source breakdown voltage	$-I_G = 1\text{ }\mu\text{A}$ $V_{DS} = 0$	–	25	V
$-V_{GS(off)}$	gate-source cut-off voltage PMBFJ108 PMBFJ109 PMBFJ110	$I_D = 1\text{ }\mu\text{A}$ $V_{DS} = 5\text{ V}$	3 2 0.5	10 6 4	V
$R_{DS(on)}$	drain-source on-resistance PMBFJ108 PMBFJ109 PMBFJ110	$V_{GS} = 0\text{ V}$ $V_{DS} = 0.1\text{ V}$	– – –	8 12 18	Ω

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DYNAMIC CHARACTERISTICS

$T_j = 25\text{ }^\circ\text{C}$ unless otherwise specified.

SYMBOL	PARAMETER	CONDITIONS	TYP.	MAX.	UNIT
C_{is}	input capacitance	$V_{DS} = 0$ $-V_{GS} = 10\text{ V}$ $f = 1\text{ MHz}$	15	30	pF
C_{is}	input capacitance	$V_{DS} = 0$ $-V_{GS} = 0$ $f = 1\text{ MHz}$ $T_{amb} = 25\text{ }^\circ\text{C}$	50	85	pF
C_{rs}	feedback capacitance	$V_{DS} = 0$ $-V_{GS} = 10\text{ V}$ $f = 1\text{ MHz}$	8	15	pF
Switching times (see Fig.3)					
t_d	delay time	note 1	2	-	ns
t_{on}	turn-on time	note 1	4	-	ns
t_s	storage time	note 1	4	-	ns
t_{off}	turn-off time	note 1	6	-	ns

Notes

1. Test conditions for switching times are as follows:

- $V_{DD} = 1.5\text{ V}$, $V_{GS} = 0$ to $-V_{GS(off)}$ (all types);
- $-V_{GS(off)} = 12\text{ V}$, $R_L = 100\text{ }\Omega$ (PMBFJ108);
- $-V_{GS(off)} = 7\text{ V}$, $R_L = 100\text{ }\Omega$ (PMBFJ109);
- $-V_{GS(off)} = 5\text{ V}$, $R_L = 100\text{ }\Omega$ (PMBFJ110).

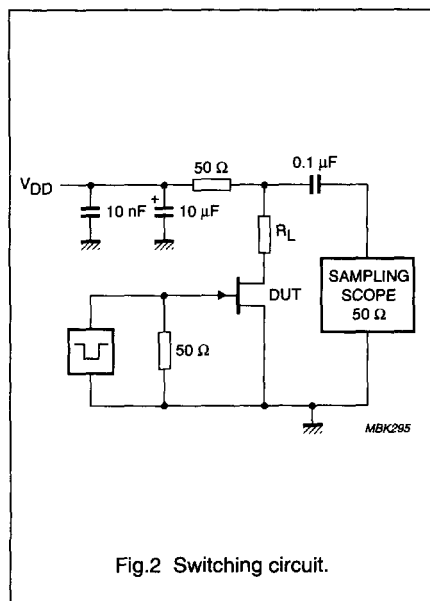


Fig.2 Switching circuit.

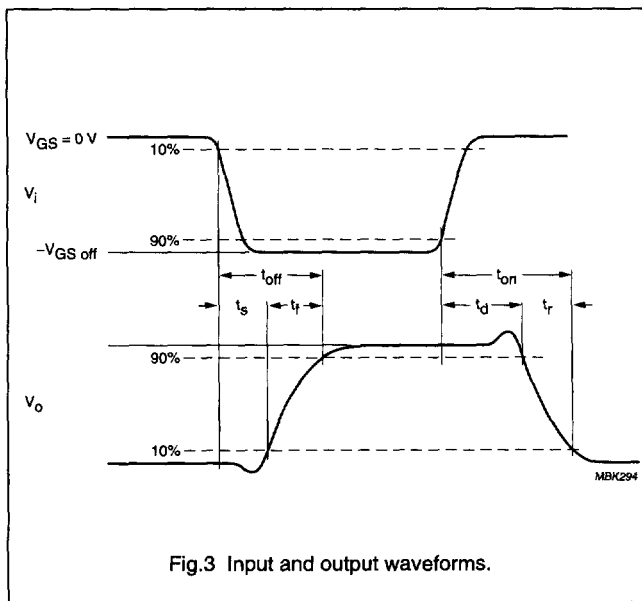


Fig.3 Input and output waveforms.